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December 30, 1950

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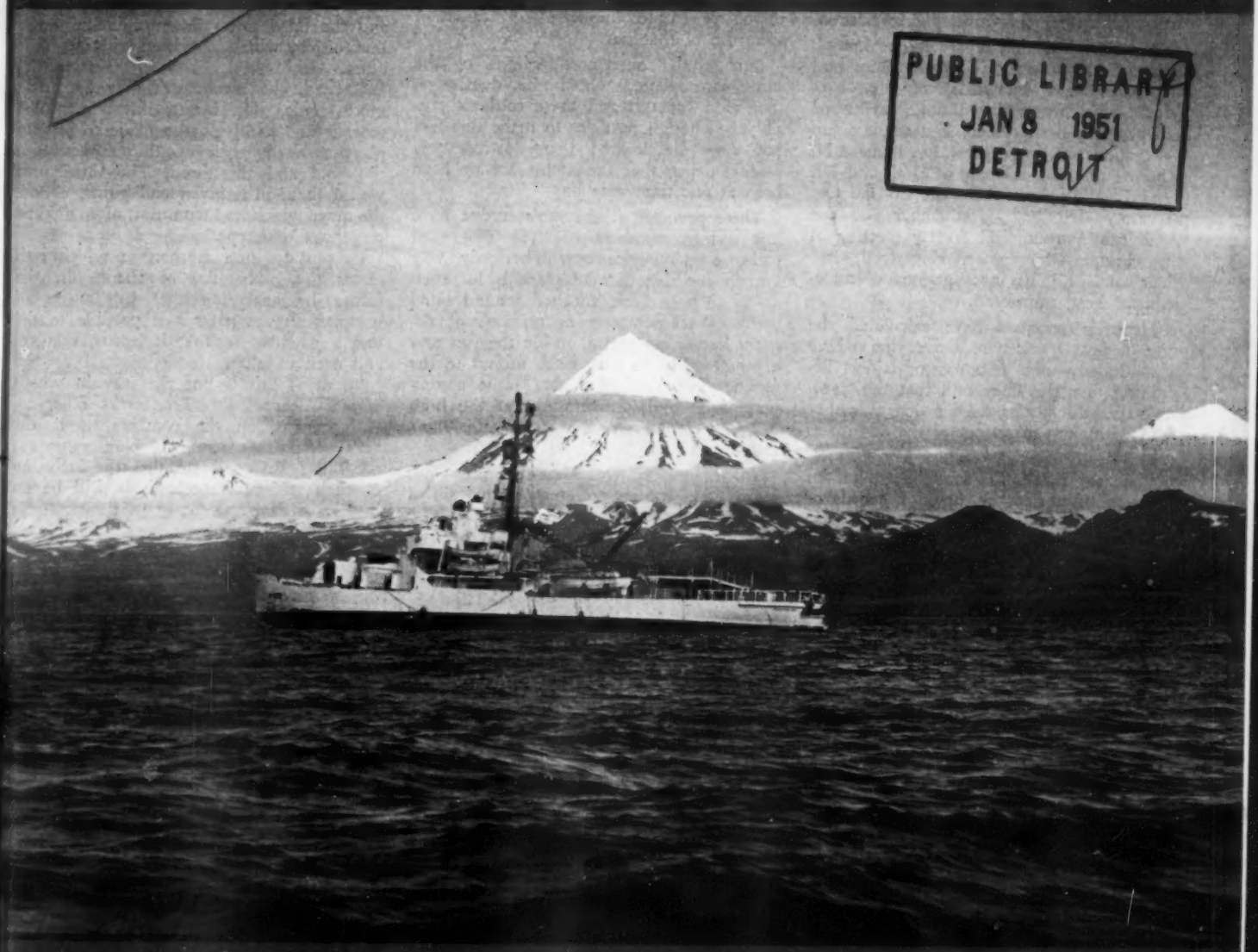
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Northwind

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ASTRONOMY-BALLISTICS

Meteor Like Rocket Front

For the same reason that a shooting star shines brightly as result of friction from the air, the front of a rocket also glows dull red.

➤ WHY A METEOR shines brightly as friction with the air heats it to high temperature is essentially the same problem as the heating of the front of a rocket traveling at one or more miles per second through the upper air. V-2 rockets have been seen to glow dull red as their tips were heated by this atmospheric friction.

The boundary that separates our knowledge of high-velocity rocket ballistics and the astronomers' knowledge of what happens to meteors as they plunge earthward has probably been crossed as a result of investigations still in progress. Dr. Richard N. Thomas of the University of Utah and Dr. Fred L. Whipple of Harvard College Observatory described to members of the American Astronomical Society meeting at Strawbridge Observatory, Haverford, Pa., their current joint investigations of astroballistic heat transfer.

These astronomers have calculated the rate of heat transfer in the region where a solid body such as a meteor is just beginning to melt. They find that the transfer varies directly as the air density rather than with the square-root of the density as used in current aerodynamic theory.

The heat transfer is something like ten times more efficient at the high speeds of meteors, which are racing through space ten to forty miles per second when they enter our atmosphere, than at the speeds of our present fastest rockets.

With his associates Dr. Thomas computes the temperature of the glowing surface of a meteor to be about 3,000 degrees Centigrade when at its brightest.

Further work is being done to determine the maximum size of a meteor that can reach the ground in one piece, this depending partly on the rate of deceleration of the meteor as it falls.

What Is Temperature?

WANTED: New definition of temperature.

Dr. Charles Hetzler of Brown University pointed out to those attending the meeting at Haverford College that astronomers themselves have been guilty of considerable confusion.

Temperature to the man in the street is something he feels by his sense of touch. Actually, it is a result of the transfer to his skin of the energy of molecules in the air or in solid substances. Or it may be received directly from the radiant energy of the sun, a sun-lamp, a stove or radiator, or just from the walls of a room.

To a physics student, temperature is proportional to the average kinetic energy of the particles in a given volume of a substance, a gas being the simplest case. Astronomically, the surface temperature of a star is that to which an idealized mass of material, called a "black body," would have to be raised to duplicate the radiation spectrum of that star.

But in the outermost regions of the sun's atmosphere, where the density is that of a vacuum and there couldn't possibly be enough particles to make one feel hot were he located there, astronomers find evidence that the atoms are or have been at one time very hot.

These particles of the sun's corona have lost serious numbers of their outermost parts, or ring electrons. The only way known for this to take place is for such atoms to have been knocked around quite badly at temperatures of millions of degrees known to prevail inside the sun and other stars, or to have been subject to the terrific X-ray radiation that must accompany such high temperatures at the high densities found in the sun's and star's interiors.

All of which, Dr. Hetzler points out, leaves the concept of temperature in a rather confusing state. Bringing in the concepts of relativity, he suggests that "temperature is a measure of the density, in space and time combined, of the relative motion."

The temperature at a point therefore depends on the total energy of the motion, including atomic, molecular, electronic, and the like, relative to the unit volume about that point per unit time.

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MATHEMATICS

Machines Can Play Chess; But Human Should Win

➤ MACHINES can learn to play chess and other games, a British mathematician, Dr. J. Bronowski, argues in a discussion being conducted in columns of the leading British scientific journal, NATURE (Dec. 16).

Dr. Bronowski, who during World War II conducted bombing studies, and who now is with the Central Research Establishment of the National Coal Board, argues that while it is true that a machine cannot learn unless it is provided with a mechanism for learning, it is quite possible to devise such a mechanism.

Machines can be designed to make the best move at each step in a game of tic-tac-toe or chess, Dr. Bronowski reports.

"When playing against a series of human opponents, such a machine may never do much better than draw. A good human player against the same opponents may score more wins by making unsound but more puzzling moves," he says.

A machine can be made to imitate the human player; instead of playing perfectly, it can be made to play well, by the inclusion of an empirical or statistical mechanism in three units. One unit makes the machine experiment with different alternatives each time certain positions are reached; the second unit counts the results and relates them to the alternatives chosen; and the third steers the machine into the lines of play which have been winning most often.

"Indeed, the mechanism may be made more subtle," Dr. Bronowski states. "The second unit could also be made to classify players, say by their opening moves, into the bold and the timid. The third unit would then, in a given end game, choose the move which had won most often against players of that type."

By putting in a mechanism which estimates the probability of success in the future by analyzing the distribution of successes in the past, it is possible to devise a machine so that it learns, matures and even develops a style.

"Perhaps this is not the way in which animals learn," Dr. Bronowski observed, "or perhaps, on the contrary, it is the very reason why animals play games at all. But I am confident that the inclusion of such statistical mechanisms will be an important development in machines. I can speak for its usefulness in strategic problems, for I myself used it in a rudimentary form in bombing studies, in those spacious days when we worked with punched cards."

Science News Letter, December 30, 1950

METEOROLOGY

Billion Tons of Air Moved to Make Weather

➤ BEFORE scientists get any fancy notions about making weather to order they had better sit down and figure out a way to move a billion tons of air. That is the amount of air that has to be shifted to make a reasonable area of depression, according to Sir David Brunt, professor of meteorology at London's Imperial College, who calculated it all out to an accuracy of within two per cent.

It is the movement of cold air from a high pressure area into an area of depression that is the major factor in weather making, he told the Royal Institution.

Until science develops a way to move that billion tons of air, it just will not make much of a depression—or impression on the weather for that matter.

Science News Letter, December 30, 1950

MEDICINE

Gamma Globulin for Polio

Blood factor also used against measles believed useful in warding off infantile paralysis attacks. Trial on every other child in a community needed for test.

➤ NEEDED for polio fighting next summer: A community of brave, intelligent parents. They must be brave enough and smart enough to let their children be the guinea pigs in trial of a safe but not sure method of warding off the disease.

The method would be injections of material from blood, called gamma globulin. Many children now get gamma globulin to ward off or make less severe an attack of measles. The gamma globulin fraction of blood plasma contains substances called antibodies that give resistance to disease. They get into the blood as the result of infection with the disease germs.

Laboratory studies have gone far enough now to show that gamma globulin might be useful in warding off poliomyelitis attacks, Dr. William McD. Hammon of the University of Pittsburgh believes. He gives his reasons in a report to fellow physicians in the medical journal, PEDIATRICS (Nov.).

But in order to be sure the gamma globulin will protect children from polio there must be a careful trial of it. This is where the brave parents come in. Because in the trial, the material should be given to every other child in a community. Some will have to miss the chance of getting polio protection. No one but the scientist in charge will know which child gets the gamma globulin and which gets some harmless, inactive material. At the end of the polio season, a tally will be made to see whether there were more cases of infantile paralysis among the children who did not get the gamma globulin.

Unless the trial is made in this way, Dr. Hammon emphasized, no one will ever know whether gamma globulin can protect children against polio. This is because in every epidemic some children get sick and others escape the disease. If every child is given gamma globulin, no one will know whether those who stayed well would have stayed well without the globulin.

So far as Dr. Hammon knows, no plans for this kind of controlled trial of gamma globulin against polio next summer have yet been made. He hopes such a trial can be made.

Even if gamma globulin does get a trial and proves effective in warding off polio, it is not a perfect solution to the problem. For one thing, it gives what doctors call passive immunity. This is not lasting. Probably it only lasts four to six weeks, while the polio season runs for several months. Consequently children would have to get shots of gamma globulin several times through the season. The proper dosage has not yet been determined.

Best hope for an effective way of dealing with polio, in Dr. Hammon's opinion, is the development of a drug to stop the disease. He does not think active vaccination against it, such as vaccination against smallpox or shots against diphtheria, will be the answer.

So far, no effective anti-polio drug has been discovered. But the prospect is encouraging, because some drugs have been developed which are effective against some other viruses. Some day, Dr. Hammon thinks, one will be discovered which will check the polio virus.

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BURIED TREASURE—These flint pieces, recently dug up, may have been "money" laid away by some prehistoric Hopewell Indian some 2,400 years ago. They are much too finely worked to have been made for hunting or war.

MATHEMATICS

Number 1951 Is Mathematical Curiosity

➤ THE YEAR 1951 is just a few days away. Irrespective of what it may have in store for us and for the world, the number itself is peculiar from a mathematical point of view.

First of all, 1951 is a prime number. No matter how hard you try, the only numbers you can find that divide into it evenly are itself and unity. Secondly, it is a twin prime, since 1949 was also a prime number. The numbers 11 and 13, 17 and 19 are also twin primes, but twin primes among the higher numbers are quite rare.

We shall not again have another such pair of twin primes in our dates until the end of the century, points out Prof. Oystein Ore of Yale University. The next twin primes are 1997 and 1999, to be exact.

Science News Letter, December 30, 1950

ARCHAEOLOGY

Flint Store Believed Money of Ancient Indian

➤ FLINT PIECES that may have been part of the wealth of a prehistoric Indian are now at the University of Illinois.

The pieces range from raw blocks to expertly fashioned big spear points. Prof. John C. McGregor, University of Illinois archaeologist, believes the spearheads are much too finely-made to have been used for hunting or war. Most likely they were a meduim of exchange, he has concluded.

The cache was uncovered in Calhoun county between the Mississippi and Illinois Rivers, northwest of St. Louis. In this area are many remains of the prehistoric Hopewell or mound-builder Indians. Radiocarbon dating set the time of their culture at 200 to 600 B.C.

Science News Letter, December 30, 1950

MEDICINE

New Respiration Method

Combination of Schafer prone pressure method with a hip-lift or hip-roll method was tried out on 100 warm corpses and nine living men.

➤ A NEW method of giving artificial respiration to restore life, tried out on 109 warm corpses and on nine living men who voluntarily stopped breathing for the experiments, is announced in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Dec. 23).

The method was developed by Dr. A. C. Ivy and associates of the University of Illinois College of Medicine. It consists of a combination of the Schafer prone pressure method and a hip-lift or hip-roll method.

The "ventilating efficiency" of the prone pressure method, taught in American Red Cross and other first aid classes, can be doubled by adding the hip-lift maneuver, Dr. Ivy and associates found. By ventilating efficiency is meant the amount of air that gets into the lungs.

To use the new method, the operator lifts the victim's hips four inches 12 times a minute, alternating this with the push on the chest of the prone pressure method. Since lifting the hips is tiring, after the first crucial few minutes it may be done after every second or third push on the chest. The hip roll was developed as a less tiring, easier method of accomplishing the ventilation of the hip-lift maneuver. To do this, the victim is grasped at the distant hip and "rolled" onto the rescuer's knee and back again.

Dr. Ivy and associates compared the efficiency of eight methods of manual artificial respiration and the Eve rocking method in which the victim is rocked on a board like a child's see-saw. They found that the manual methods in which the victim lies prone or on his back and which use both a push and a pull are more effective than those using only a pull or only a push, such as the Schafer method. The prone, or face down, method was found safer.

The study was assisted by a grant from the American Red Cross. Red Cross authorities in Washington stated that they will make trials of the new hip-roll prone pressure method in some of their classes, before deciding whether to adopt it officially. The method now taught ventilates the lungs as well as normal breathing does, Dr. Ivy's studies show. Consequently Red Cross authorities do not believe it wise to change the method yet, especially as the hip-roll procedure is harder and takes more strength.

Emphasized by Dr. Ivy and associates is the importance of the first few minutes in starting artificial respiration. Those working on the study with Dr. Ivy were: Drs. Archer S. Gordon, Frank Raymon, Max Sadove and David C. Fainer.

Science News Letter, December 30, 1950

MEDICINE

ACTH Helps Patients With Tendency to Bleeding

➤ ACTH and cortisone, famous for the relief they bring to arthritis-crippled joints, are helping patients with a tendency to excessive bruising and bleeding. The condition is known as idiopathic thrombocytopenic purpura. It is due to failure of the bone marrow to produce enough blood platelets.

"Remarkable results" in ACTH treatment of three patients with this disease are announced by Dr. Muriel C. Meyers of the University of Michigan.

The patients not only improved but have remained well, with no relapses, for more than six months since the treatment was stopped.

ACTH failed to help two other patients with this disease, but they were then given cortisone and got good results from that drug.

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Question Box

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GENERAL SCIENCE

Plan for Brainpower

Six Scientific Advisory Committees to Selective Service offer recommendations for best utilization of scientific and technological skills and continuance of training.

➤ MANPOWER PLANS — and specific plans for scientific, technical and engineering manpower—are legion around Washington. The plans which many men have proposed, Congress and the President will dispose after Jan. 1.

Since scientific and technological skills are the most critical of all our skills, planning for them has come first. It is considered likely that whatever plans for the utilization of these skills are adopted, they will be adapted for all personnel whose skills take two years or more to acquire.

After Jan. 1, Congress proposes to amend the current draft law. The legislators then will decide whether to make deferments—either for training or for critical work—part of the new law—or leave the spelling out of these matters to the Executive.

One plan, based on two years of work, was presented recently in Washington. It was the work of the six Scientific Advisory Committees to Selective Service Director Lewis B. Hershey, Dr. M. H. Trytten, chairman.

This presentation was made at a meeting to which were invited more than 300 college presidents, scientists and government officials. Since Harvard President James B. Conant's plan for Universal Military Service for all 18-year-old men had just previously been launched with considerable publicity, the committees felt it advisable to explain to the public the facts on which they worked and the line of thought they followed. Science News Letter herewith presents condensations of the four presentations:

The Facts

By E. LOWELL KELLY

Professor of Psychology
University of Michigan

➤ THE COMMITTEE'S objective is the objective of every thinking citizen: let us move as rapidly as possible to make our nation strong in all ways and let us plan so as to maintain that strength through the many uncertain years ahead.

We wish to call your attention to a series of facts these Committees were forced to consider. Furthermore, they are facts which dare not be overlooked by anyone making recommendations or decisions with respect to manpower utilization.

Our total population is about 150 million. It is anything but large when compared with the population and manpower resources of our potential enemies. Something less than half is gainfully employed. The other half is composed of persons too young or too old to work or busy as housewives and mothers.

At the maximum during World War II, only about 11,000,000 men were in uniform. This figure could probably be exceeded somewhat but it does serve to remind us of a definite limitation on the maximal size of a military force.

The second fact concerns the supply of new manpower each year. This figure is largely determined by the number of male babies born 18 or 19 years before, currently, about one million males. Even with reasonably liberal physical standards, it seems unlikely that more than 800,000 of the one million might be acceptable for military service.

The actual number of men to be drafted and the length of time they will be required to serve is primarily a function of the size of the armed force to be maintained.

Assuming a defense force of three million and assuming a million newly available men each year, a continuing force of this size could be maintained only if each

ENGINEERING

Alaskan Outposts Get "Northwind" Delivery

See Front Cover

➤ BRINGING SUPPLIES and fuel oil to lonely outposts in Alaska is a U. S. Coast Guard job that can be both wet and hazardous.

The Coast Guard's $10,000,000 icebreaker "Northwind" has just finished the annual delivery to the country's most remote military installations, tiny stations scattered along the rockbound Alaska shores from the Canadian border to the Bering Sea.

Oil for an entire year must be delivered to each installation. To do it, the icebreaker carries a 10,000-gallon barge on her deck where a helicopter would normally ride.

The barge is loaded with oil from the ship's tanks and towed ashore by a landing craft. Sometimes, where there is no beach, the barge must remain offshore and the oil is pumped through hundreds of feet of hose.

BATTLING WAVES—Coast Guardsmen fight the elements for nearly half a day during refuelling operations at Cape Hinchinbrook Light Station, Alaska.

young man served for three years. Many people have concluded that our problem can best be met by requiring a period of two to three years of military service for all men shortly after becoming 18 or 19. Attractive as this solution is by virtue of its simplicity, it fails to take into consideration additional facts which our Committees believe to be demanding of attention.

The first of these is that the free nations of the world are not able to match their potential enemies on the basis of manpower alone. This means that our hope for survival must depend not on numbers alone, but on the superior utilization of manpower. To our Committees this means that every person must serve his country in a capacity which permits him to make the greatest contribution to the national welfare.

Modern society is becoming increasingly complex and so is modern warfare. The cold war has emphasized the importance of technological developments such as psychological warfare which are based on fields of specialization other than those ordinarily regarded as contributing to the direct military application. This rapid increase in the role of scientific and technological devices and services has been paralleled by a mounting demand for scientists, specialists, and other professional personnel in the military services, in government agencies, and in the civilian economy. *We dare not overlook the fact that these specialists cannot be trained in a matter of a few months.* For many fields of specialization the training of personnel must be planned in terms of four to eight years. There are simply not enough trained scientific specialists and professional personnel to meet the nation's needs for even a short period of large scale mobilization.

The facts to which our Committees have given serious and recurring attention are those all too often overlooked in considering the problem of manpower utilization. We tend to overlook the incontrovertible evidence concerning the ways in which men differ with respect to the manner in which they can best serve the nation.

The known differences among men are related to their ability to perform useful functions in our society. For example, although the average child develops mentally at a rate which permits him to learn to read at the age of 6 or 7, there are other children whose mental development never proceeds far enough for them to learn the meaning of printed symbols. At the other end of the human ability scale, we find children whose mental development is as accelerated as that of the feebleminded child is retarded.

It is a fact that later ability to perform in complex adult situations is closely related to ability to perform in our typical American schools. Psychologists who have studied the problem in considerable detail refer to this ability as "scholastic aptitude." It seems to be primarily a matter of ability to manipulate words and numbers and to think in terms of abstract relationships.

The distribution of human ability in our male population is measured by the Army General Classification Test. The scale, ranging from 40 to 160, represents the range of human ability as measured in AGCT units. This is an arbitrary scale which has been developed by assigning a value of 100 to the test score made by the average male adult and the other values were determined by the actual distribution of scores made by large numbers of Army personnel. Slightly over two-thirds of all men make scores falling between 80 and 120.

Persons scoring below 70 are not currently subject to induction under the Selective Service Act. Such persons are usually illiterate, and typically have much difficulty in adapting to military life. Some 7% of any adult age group will score below this point.

Only 16%, or one out of six men score above 120. However, it is a relevant fact that four out of five college graduates exceed this score—even though the test is taken before entering college! Now since practically all scientists, doctors and professional men are persons who stood in the upper half of their college graduating class, we can see at once that this upper region, representing scores of say, 135 or above, contains a small but very important segment of our population, although amounting to but 5% to 10% of the total population of any age group. It is from this segment of our manpower distribution that the nation must recruit practically all of its research workers, scientists and other specialized and professional personnel.

It is true that a man with a score of 135 or above can become a good soldier. It is also true that he owes as much to his country as the lad with a score of 80 to 110. But, can we as a nation, faced with the necessity of developing and maintaining our technological and military supremacy, afford to utilize these two men in the same manner? These facts concerning differences in human ability must be allowed for if we are not to squander one of our most precious national resources. We doubt that a nation can afford to have certain young men spend two years in military service if the same nation is likely to need them even more a few years later as high level specialists in either a military or civilian organization.

These are the facts to which our Committees wish to call your attention as demanding consideration in arriving at wise policy decisions concerning manpower utilization.

The Line of Thought

By CHARLES E. ODEGAARD

Executive Director,
American Council of Learned Socities

➤OUR discussions quickly brought to the fore three major considerations: First, there were two phases to the problem of proper handling in the national interest of scientific, professional and specialized personnel, the training phase and the utilization phase, but these are directly related.

Second, any plan should be capable of adjustment to meet varying degrees of national emergency from a small military force in being, to a large standing army, or a full-scale war. Even in full-scale mobilization, there will continue a need for selection for different kinds of service which set up different requirements in training which even during war will have to be provided.

Third, Uncle Sam can no longer advisedly play the role of Mr. Big. In sheer manpower he cannot match the Soviet Eurasian giant. Our ultimate defense rests in the skill with which we use ourselves. Our manpower plan should respect the fact that our nation must now fight as a whole with everyone obligated to service, yet the civilian and military must be knit into one articulated plan. National defense is now more than a military affair. Both essential military and civilian activities are dependent as never before upon a wide variety of highly developed skills and knowledge. Yet there is still a dangerous tendency to think of manpower as though it were made up of identical and interchangeable units, a tendency which obscures the many kinds of service necessary to national defense and the human variations in capacity to render these services.

The committees assert that it is now an absolute requirement for the safety of the nation that our manpower plan provide for the maximum use of highly trained manpower as an important component of defense itself. The training of such persons is, therefore, not to be viewed as a privilege for the individual but as a national necessity. How much provision should be made is a matter for determination according to the absolute necessities of the moment.

Proposals affecting the training of specialized manpower fall into a limited number of possibilities. There is first the idea which can hardly have many defenders, that there should be no induction of college students.

Far more serious is the proposal that all undergraduates should be subject to induction on the theory that after 21 months or some such period they could return to college for training. Mr. Conant's recently announced proposal covering the induction of the entire 18- and 19-year-old age groups is a variant of this theme. Even assuming that this plan would produce

(Turn to page 425)

ASTRONOMY

Venus in Evening Sky

Bright and beautiful planet joins the bright stars of January. Is visible for about an hour after the setting of the sun. Can be seen before dark.

By JAMES STOKLEY

➤ THOUGH it does not show on the accompanying maps of the evening skies, the brilliant planet Venus is now coming into view after an absence of many months. During January it sets about an hour after the sun, actually before the end of evening twilight. However, it is so bright (magnitude minus 3.4 on the astronomical scale) that it can easily be seen low in the southwest even before darkness has fallen completely. It is slowly drawing away from the sun, toward the east, so in the coming months it will be setting later and later, thus becoming more and more prominent.

Our maps depict the appearance of the heavens at the beginning of January at about 10:00 p. m. your own kind of standard time, if you are located close to the central meridian of your time belt. These are the meridians marking 75 degrees west longitude for the Eastern time zone, 90 degrees for Central time, 105 degrees for Mountain time and 120 degrees for Pacific time. For observers well to the east of these meridians, the stars would be arranged as shown up to half an hour earlier, while those in the western parts of the time zone would get the same appearance a half hour or so later than 10:00 o'clock.

Because our time is based on the sun which moves eastward through the stars, they seem each evening to slip westward a little for the same time by the clock. By the middle of January, the maps will show the skies an hour earlier than they did at the start. They will be two hours earlier by the close of the month.

Another planet, however, almost gets on our maps. This is Jupiter, nearly five times fainter than Venus, but still brighter than any other star or planet. It sets around 8:30 at the middle of January and is in the constellation of Aquarius, the water-carrier. After the time for which the maps are drawn, a little before eleven, the planet Saturn rises in the east in the constellation of Virgo. Its brightness is about that of a typical first magnitude star.

Mars also is in the evening sky, in Capricornus, the same as Venus, and sets about an hour later than that planet. However, it is now so faint, because of its great distance from earth, and is so low, that it will be hard to find. The last of the five naked-eye planets, Mercury, is now in Sagittarius, the archer, which rises just ahead of the sun in the east. Around Jan. 23, when it is farthest west of the sun, it may be possible to get a glimpse of this planet low in the southeast before sunrise.

As for the stars of January evenings, the winter constellations are now shining with their full glory. Brightest is Sirius, the dog-star, seen in the southeast in Canis Major, the great dog. Above and to the right is Orion, the warrior. Betelgeuse and Rigel are the two brightest stars in this figure, while between them are three stars in a row that form his belt.

Still higher and farther west is Taurus, the bull, with first-magnitude Aldebaran marking his eye. Capella, in Auriga, the charioteer, stands directly overhead. Moving downwards toward the east, we come to the twins Gemini, of which Pollux is the brightest star. Between Gemini and Canis Major is Canis Minor, the lesser dog, with the star Procyon.

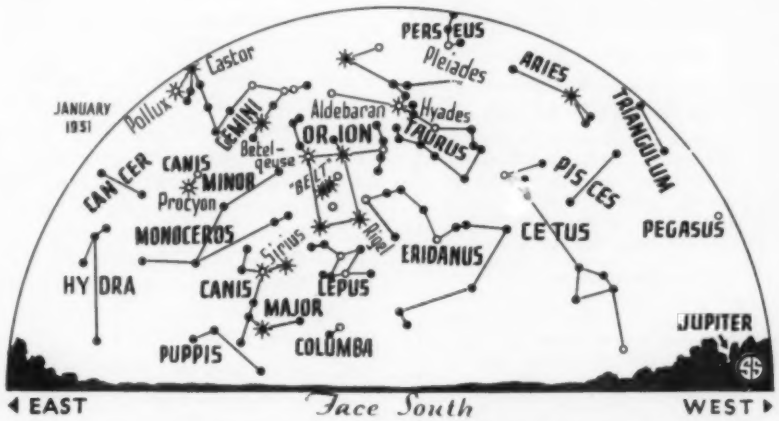
In addition to these stars, two others of the first magnitude are shown, though they are so low that their light is considerably dimmed. Low in the east is Regulus, in Leo, the lion, which will be coming into better view during the coming months. On the other hand Deneb which is about all of Cygnus, the swan, that remains visible in the northwest, is about to disappear for a while.

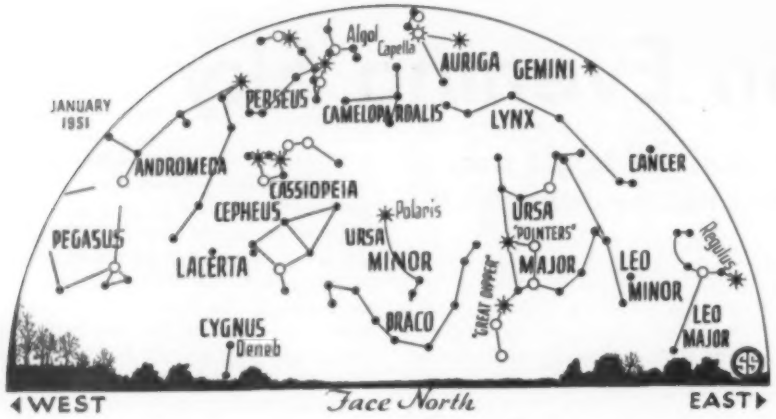
Of all the stars in the sky, except the sun, the brightest is Sirius, the dog-star, which now shines so brightly in the southeast. In its intrinsic brightness, or candlepower, it exceeds the sun by about 21 times. Many stars are far more brilliant than this. The reason Sirius looks so bright is because it is so close. While there are six stars, again excepting the sun, which are even nearer, four are so faint that a telescope is needed to show them despite their proximity. The other two are not visible from most of the United States, as they are from more southerly countries, so that Sirius actually is closest of the stars we normally see. Its distance is 8.7 light years, equal to about 52,000,000,000,000 miles—the length that a light beam will cover in 8.7 years, going 186,000 miles each second.

Over a century ago a German astronomer, named Bessel, plotted the movement of Sirius across the sky, which is fast enough to take it the space of the full moon's diameter in 1200 years. Bessel found that it did not move in a straight line, but swung first to one side, then to the other. This immediately suggested that there was not one star, but two, moving around each other, and that it was the center of gravity of the system that moved in a straight line. His prediction of such a companion was confirmed in 1862 when Alvan Clark, Jr., a Massachusetts telescope maker, happened to look at Sirius through a new telescope just completed for a Chicago observatory. The companion was revealed for the first time. Later studies have shown that the period of revolution of the two bodies is a little under 50 years.

Though Sirius is some 10,000 times as bright as its companion, the two are nearly the same color. This means that each is giving off a similar amount of light per square mile of surface. The only way for the companion to be so faint is for it to be much smaller than Sirius, and it turns out to be about the size of the planet Uranus. Yet, from the way it revolves around Sirius, its mass may be calculated, and it turns out to contain about the same amount of material as the sun does.

Since the diameter is about a thirtieth that of the sun, its actual volume is only about 1/27,000th, and with the same





amount of matter concentrated in so small a space, its density must be extraordinarily great. The old rule of "A pint's a pound, the world around," does not hold there! A pint of the stuff of Sirius B, as the companion is designated, would weigh about 20 tons.

Perhaps even more extraordinary is the fact that this superdense material is not even solid, but is a gas. Fortunately, however, modern atomic theory gives us an idea of how this might be. An atom, like the solar system, consists mostly of empty space. There is a nucleus around which, at various distances, are moving a number of electrons. Dr. R. S. Richardson, of the Mt. Wilson Observatory, compares atoms to a number of men, each of whom has a heavy weight on the end of a string, which he is rapidly whirling around his head. While they do this, the men could hardly approach each other very closely, but if the strings should break and the weights fly off, then the men could crowd very near together.

This is believed to be what has happened to the atoms in Sirius B and in other "white dwarf stars," some of which are nearly a thousand times as dense. With atoms tripped of their electrons, the nuclei (which have most of the mass), can come many times closer together. They may still be separated enough for them to move around freely and thus have the properties of a gas.

Celestial Time Table for January

Jan.	EST	
1	12:11 a.m.	Moon in last quarter
6	8:00 a.m.	Moon nearest, distance 223,500 miles
7	3:10 p.m.	New moon
8	6:27 p.m.	Moon passes Venus
11	7:31 a.m.	Moon passes Jupiter
14	7:23 p.m.	Moon in first quarter
17	11:27 p.m.	Algol (variable star in Perseus) at minimum
18	9:00 a.m.	Moon farthest, distance 251,900 miles
20	8:16 p.m.	Algol at minimum
22	11:47 p.m.	Full moon
23	5:05 p.m.	Algol at minimum
	11:00 p.m.	Mercury farthest west of sun
27	11:29 p.m.	Moon passes Saturn
30	10:13 a.m.	Moon in last quarter

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, December 30, 1950

ARCHAEOLOGY

Find Ancient Camp Site About 12,000 Years Old

➤ DIGGING deep in the icy soil of northern Alaska, Robert J. Hackman, a U. S. Geological Survey worker, found remains of a camp site where prehistoric Americans bivouacked some 12,000 years ago.

The discovery was announced in Washington by the Smithsonian Institution, which has received from Mr. Hackman a considerable collection of stone points, work of the ancient people.

The collection includes lamellar flakes and burins similar to those found by Dr. J. L. Giddings, of the University of Pennsylvania, under seven feet of soil on Cape Denbigh. The Giddings finds are considered the oldest work of man in the New World and resemble the work of Stone Age man in the Old World. The new collection was found buried about ten inches deep in Anaktuvuk Pass through the Brooks Range in northern Alaska.

A similar find was made independently at about the same time by William Irving, a student at the University of Alaska. Mr. Irving's discovery was made not far from Mr. Hackman's, and it was also probably remains of a bivouac on the trail taken by the first Americans from the Alaskan coast to the interior of the North American continent.

In addition to the flakes like the Cape Denbigh culture, the Hackman collection includes some Folsom-like points which link this ancient people to ancient man in the United States Southwest. There were also points of unique design.

Unfortunately, no organic matter was found with the stone points that could serve to date them by the radioactive carbon calendar method. Antiquity of the specimens was calculated from study of the geology of the site and the style of workmanship of the points.

Another Geological Survey worker, Milton C. Lachenbruch, found two Folsom points near the headwaters of the Noatak River, just beyond the Brooks Range. This site was probably a third bivouac in the great migration.

Science News Letter, December 30, 1950

PUBLIC HEALTH

Cholera in India Not Alarming in U. S.

➤ A CHOLERA outbreak in India "does not make news" to health authorities in the United States, Dr. G. L. Dunnahoo, director and chief of the foreign quarantine division of the U. S. Public Health Service, commented on reports that the disease is attacking hundreds of thousands on a pilgrimage to the village of Rantali in eastern India.

Cholera is always smoldering in India. World Health Organization has been getting reports of four to eight thousand cases weekly for months.

When cholera jumps a thousand miles, as it did in the Egyptian outbreak in October, 1947, it is news to health authorities as well as the general public. But the chances of it spreading to the United States are very slim. One or two cases might come in by plane. U. S. quarantine officers, however, are stationed at international airports here to guard against just that happening. Passengers from regions where cholera exists must be vaccinated. If in spite of this a case is found on a plane or boat arriving in the United States, passengers and crew are held in quarantine for five days. This is the length of time it takes cholera to develop.

The disease spreads through contaminated drinking water, food and eating utensils. Vaccination is the weapon used to check outbreaks.

Chloromycetin and other antibiotic drugs and sulfa drugs have all been tried as remedies, but none has been an unqualified success.

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From Page 422

sufficient manpower for the military, and that this mass levy of relatively untrained manpower along with the regulars and the reserve components could meet for some years in succession the military *varied* manpower requirements for a force in being, assumptions which certainly require closer scrutiny, the committees cannot accept this proposal. The nation is already faced with a serious shortage of scientific, professional and specialized personnel. Full-scale induction of college students and the 18- and 19-year-old age groups, would virtually stop for a period of at least two years the production of critical scientific, professional and specialized personnel. Furthermore, many of those entering military service might not have opportunities to return to institutions of higher learning for further training if an intensification of the emergency resulted in a prolongation of their term of military service. The committees have little confidence that any moral commitments to release men after two years service can be effective after they have once been trained for military duty. One can easily imagine the pressures which would work to keep these men in uniform on military duty when they constitute already the force in being. The committees believe this proposal constitutes a great danger to national security.

Furthermore, the proposal to induct entire age groups emphasizes a principle opposite to the principle that in this crisis each person should serve where he can best contribute. If this principle is once established it would almost inevitably be extended to all age groups and tend to withdraw specialized personnel from industry, education and the government at the very time when the need for these persons is more crucial than it has ever been.

If there were a mass levy of age groups the very necessities of the situation would soon require the return of some of them to college for training. If so, the problem of selection for further training still has to be met (indeed, it is one from which we cannot escape). Is it best to burden the military organization with the educational problems more familiar to the civilian university, and is it best to ask the military to determine entirely the programs of training to be pursued when civilian as well as military components are now fully involved in defense?

What other alternatives are there? We might select among age groups certain individuals whose active service in the national interest is postponed during a period of training. The common denominator in some of these proposals is that those students who are preparing for "essential" sciences and professions should be permitted to continue their training.

However, there are the difficulties—and the dangers—in identifying in any rigorous way the essential sciences or fields of specialization as the bases for deferment. If one knew the exact character of the particular emergency which the Nation might face at a given period in the future, one might hazard some guesses as to essential fields—but then one would also have to know the nature of coming developments in the sciences themselves. Fifteen years ago nuclear physicists and professors of Japanese language would have been dismissed as a luxury. Such proposals are to be viewed as somewhat irresponsible until their proponents are willing to state and document the essential fields of learning and the nonessential. The very list would form the shape of things to come, largely extinguishing some fields of knowledge or stopping their growth, and predetermining the lines of the nation's scientific and cultural development. It will also predetermine the sciences and skills available to us for our defense. The nation which has guessed wrong could easily be all wrong if this policy is followed.

The committees are convinced that highly specialized persons, to be useful in the national welfare and defense, need in addition to their specialty a broad basis of knowledge. This, with intelligent imagination and specialized competence, enables men to meet new situations and to devise new techniques of control. Loss of adaptability will come inevitably with a narrow range of training, and the nation cannot now afford to lose ingenuity in planning and research.

Science News Letter, December 30, 1950

The Plan

➤ THE COMMITTEES' recommendations to General Hershey were divided into two parts, training and utilization.

Under training, they recommended a special classification for students. Young men could enter this classification provided they received higher than a to-be-determined cut-off mark on a national college aptitude test. (Equivalent of 120 on the Army General Classification Test has been suggested.) They could stay in throughout college if, within the group at the registrant's college of so-deferred men, they stayed above a rank to be determined. (90% after freshman year, 95% after other years has been suggested.) Checks on continuance of good work would be made on graduate students.

At the end of training, the registrant would be liable for military duty even though he had passed statutory draft age.

Under utilization, they recommended that a graduated student should hold such classification for four months after graduation. If he gets an essential job utilizing his training, he can then be deferred for reasons of the national health, interest or safety. Other draft age men of similar training could qualify for deferment in the same way.

They also recommended setting up in Selective Service special advisory committees in major areas of training. The committees would advise Selective Service on specialized personnel needs of civilian and military and make recommendations to local and appeals boards. The committees would also define functions within their fields and needs for specialized personnel.

Science News Letter, December 30, 1950

Training

By HENRY A. BARTON

Director,
American Institute of Physics

➤ ANY PLAN for training specialists must recognize the need for military manpower. This means that only a limited number of persons can be channeled into the lengthy courses of training required by modern specialization. This limited number will have to be selected.

If there is to be war, it will probably be a short war only if we lose. It is inevitable that provision for training specialists will have to be made eventually no matter what plans are adopted for national service for youth. Any such provision will involve selection. Our mandate was to propose a plan which could operate through the Selective Service System. Our plan is designed to achieve three major objectives:

1. To postpone the period of service in the national interest of selected individuals in order to prepare them for those responsibilities which require education and training.

2. To select for such education and training those individuals whose demonstrated aptitude offers a high probability that they will successfully achieve the competence which the nation requires.

3. To provide a system in which the number so postponed may be flexibly adjusted to produce the optimum balance between the immediate needs for military manpower and the longer term needs of

both civilian and military activities for specialized manpower.

We believe that an adequate minimum flow of specialists in the sciences, engineering, and other fields can be provided by this procedure. It is presumed that an R. O. T. C. program in the colleges will be continued. Also, a certain percentage of young men of college age will not satisfy physical requirements for military service. Neither of these groups would be subject to Selective Service. Of the remaining young men subject to Selective Service and who would expect to go to college, a minimum score of 120 would screen out well over half of these. If at the end of the freshman year 90% of these selected individuals were continued into the sophomore year, 95% of the sophomores continued into the junior year and 95% of the juniors continued into the senior year, about 65,000 young men in this class would graduate from each age group. This would be a small number. However, it is our hope that the productivity of this selected group will be at a high average.

This plan will provide the desired flexibility. Adjustments can be made by adjustment of the cutting score and the percentage carried over from year to year. No legislation is necessary to provide authorization for this procedure.

We not only recognize, but call attention to, the fact that opportunities to go to college have not been available heretofore, nor are they now to all elements of our population. However, this is a social problem which the nation must solve. The committees do not believe that an unwise manpower and Selective Service policy should be adopted because of an inadequate national policy with regard to the distribution of educational opportunity.

Science News Letter, December 30, 1950

Utilization

By ALEXANDER C. MONTEITH

Vice President, Westinghouse Electric Corporation

➤ THE TRAINING program will only be of lasting value to the nation *if* such highly selective and trained manpower is properly utilized.

Basically behind these deliberations is the full realization that these young men, trained in qualified institutions, are our only long range supply of technical, professional, and specialized leadership.

It therefore becomes clear that if we are to face years of preparedness, rapid development and careful conversion of such personnel is imperative.

The pool of men includes those men who have completed their training some time in the past and, too, who are becoming available through the completion of current training.

Four months should be sufficient to allow for transition from academic life to an occupation which affords the beginnings of professional life. Reclassification implies that these men in common with others will be subject to general military service unless there is a higher priority for their services in other essential activity.

The registrant or his employer must prove that his training is not just utilized but in an essential activity as well.

During the past three years we have experienced the largest college graduation in history. This reservoir of trained men should be looked upon as indispensable. Thousands of these young men who have entered their professional life since World War II are already contributing constantly to highly essential activity.

As an example in Westinghouse in War Specification Technical Department, whose work is totally on the development of secret military apparatus, 85% of the professional manpower, 67 out of 79, completed their formal education since 1946 and the majority are under 26 years of age. In addition rapidly changing circumstances have rendered the existing classification of numerous registrants obsolete. A review of the classification of trained registrants is currently in order to prevent dissipation of selective manpower.

We view the creation of an advisory committee as a major step in favoring the effective administration of our highly successful selective service system.

Each group of experts forming an advisory committee will continuously survey the essential industries and occupations within its field and advise the local and appeal boards. Guidance, current and authentic, is thus provided in the National Headquarters structure.

Science News Letter, December 30, 1950

GENERAL SCIENCE

Compulsion Doesn't Cancel Individual Responsibility

➤ DR. ALBERT EINSTEIN believes that "external compulsion can to a certain extent reduce but never cancel the responsibility of the individual."

Discussing how a person should act if his government prescribes actions which his own conscience considers wrong, Dr. Einstein made a statement to the Society for Social Responsibility. (SCIENCE, Dec. 22).

"It is easy to say that the individual cannot be held responsible for acts carried out under irresistible compulsion," Dr. Einstein said, "because the individual is fully dependent upon the society in which he is living and therefore must accept its rules."

"Institutions are in a moral sense impotent unless they are supported by the sense of responsibility of living individuals," Dr. Einstein observed.

In our times scientists and engineers carry particular moral responsibility, he said.

Science News Letter, December 30, 1950

ORNITHOLOGY

NATURE RAMBLINGS

Snowbirds

➤ WHEN icicles hang from their tail-feathers, the tiny tumbling birds of winter are in their element. Let the big, honking geese, the toothsome mallard, the strutting robin fly far to the south to palmlands under tropical suns. Snowbirds do not flee the wintry blasts. They revel in blizzards, sing in sleet, sweep snow-covered fields in open defiance of the coldest weather.

The name snowbird has been applied rather indiscriminately to a large number of small winter birds of gray, brown and white. Sparrows and finches, chickadees and nuthatches stay with us from the time of red leaves until the first white flowers of spring. From polar islands north of Alaska and Hudson Bay come the snow buntings, or snowflakes, to haunt snow-swept hillsides or bleak and ice-covered shores. Wherever are cool summers and freezing winters, there are slate-colored juncos, true birds of winter and one of the most common sparrows in America.

These hardy Vikings will spend the coldest months of the year flying over white-coated fields and lawns or clinging to weed stalks which stick up through the snow. It is the weed stalks which give clue to the snowbirds' presence. Without such remnants of harvest crop and garden, ditches and field-corners, the birds could not live through the winter.

Their appetites are highly beneficial to the farmer, for they consume vast quantities of weed seeds. They also gobble harmful insects, eating caterpillars by the droves. The amazing acrobatics of the nuthatcher and chickadee are performed as they search inch by inch over bark and twigs for the sleeping eggs and pupae of the next summer's borers and biters.

Any and all snowbirds are glad for occasional human assistance, however, in warding off winter's hunger. Crumbs from feast-day tables are banquets for them. A lump of suet nailed to a post or limb (with a tin guard beneath it to keep away the cat, an incorrigible heathen even at Christmas) is a veritable barbeque.

Given an occasional helping hand when the snow is deep and even the thermometer

shivers, the little snowbirds will ride your outdoor Christmas trees all winter. Naturalist John Burroughs said of the white snowbunting:

"A winter bird that really seems a part of winter, that seems to be born of the whirling snow, to be happiest when storms drive thickest and coldest. Its twittering call and chirrup coming out of the white obscurity is the sweetest and happiest of all winter sounds. It is like the laughter of children. The fox-hunter hears it on the snowy hills, the farmer hears it when he goes to fodder his cattle, the country schoolboy hears it as he breaks his way through the drifts toward the school. It is ever a voice of good cheer and contentment."

Science News Letter, December 30, 1950

• Books of the Week •

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWSLETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

AN ANNOTATED CHECKLIST AND KEY TO THE REPTILES OF MEXICO EXCLUSIVE OF THE SNAKES—Hobart M. Smith and Edward H. Taylor—*Gov't. Printing Office*, U. S. Nat'l Museum Bull. 199, 253 p., paper, 75 cents. A systematic treatise.

BEESWAX: Its Properties, Testing, Production and Applications—Huber H. Root—*Chemical Publications Co.*, 154 p., illus., $4.75. Explains the origin and nature of beeswax.

THE CHEMICAL FORMULARY: A Collection of Valuable, Timely, Practical, Commercial Formulae and Recipes for Making Thousands of Products in Many Fields of Industry, Vol. IX—H. Bennett, Ed.-in-Chief—*Chemical Publishing Company.*, 648 p., $7.00.

CUTWORMS, ARMYWORMS, AND RELATED SPECIES ATTACKING CEREAL AND FORAGE CROPS IN THE CENTRAL GREAT PLAINS—H. H. Walkden—*Gov't. Printing Office*, U. S. Dept. of Ag. Circ. No. 849, 52 p., illus., paper, 20 cents.

THE DEVELOPMENT OF FUNDAMENTAL CONCEPTS IN THE SCIENCE OF GENETICS—Ernest B. Babcock—*American Genetic Association*, 50 p., paper, 60 cents.

DICTIONARY OF FOLKLORE, MYTHOLOGY AND LEGEND, Vol. II: J-Z—Maria Leach, Ed.—*Funk and Wagnalls*, 662 p., $7.50.

EPHEMERIS OF THE SUN, POLARIS AND OTHER SELECTED STARS WITH COMPANION DATA AND TABLES FOR THE YEAR 1951—Donald B. Clement—*Gov't. Printing Office*, 42nd ed., 30 p., illus., paper, 20 cents. Astronomical data are presented.

EXPLORATIONS IN ALTRUISTIC LOVE AND BEHAVIOR: A Symposium—Pitirim A. Sorokin, Ed.—*The Beacon Press*, 353 p., illus., $4.00. A volume from the Harvard Research Center in Altruistic Integration and Creativity. Among the authorities contributing to this symposium are Pitirim A. Sorokin, M. F. Ashley Montagu and Gordon W. Allport.

FROM ATOMS TO STARS—Martin Davidson—*Hutchinson's* (U. S. distributor: Macmillan), 188 p., illus., $2.70. Provides a general outline of up-to-date knowledge of heavenly bodies.

GOOD SCHOOLS DON'T JUST HAPPEN!—Federal Security Agency, Office of Education—*Science Research Associates*, 25 p., illus., paper, 10 cents; free to educators. A booklet to help improve our schools.

A HANDBOOK OF SPACE FLIGHT—Wayne Proell and Norman J. Bowman—*Perastadion Press*, 185 p., $3.50. Tables on physical, chemical and astronomical data are presented.

MARKET RESEARCH SOURCES: A Guide to Information on Domestic Marketing—Lois E. Randall and Dorothy M. Sharpnack—*Gov't. Printing Office*, 261 p., $2.25.

MINUTES TO MIDNIGHT: The International Control of Atomic Energy—Eugene Rabinowitch, Ed.—*Bulletin of the Atomic Scientists*, 128 p., illus., paper, $1.00. Includes United Nations Atomic Energy Commission reports and speeches by Acheson, Lilienthal, Baruch, Vishinsky and others.

THE OAK RIDGE STORY: The Saga of a People Who Share in History—George O. Robinson, Jr.—*Southern Publishers*, 181 p., illus., $3.50. The story of the development of Oak Ridge into one of the leading atomic research centers.

ON THE POSITIVE SIDE: An Account of the Accomplishments of Mental Hospitals in Canada and the United States as shown by their applications for the American Psychiatric Association Mental Hospital Achievement Awards in 1949 and 1950—*American Psychiatric Association*, 42 p., paper, 50 cents.

OUR DESERT NEIGHBORS—Edmund C. Jaeger—*Stanford University Press*, 239 p., illus., $5.00. The author's experiences with the creatures of the desert wilderness. Well illustrated with black and white photographs.

PLATO WEAVES THE VERBAL VEIL, Vol. II of The Historic Approach to the Theory of Relativity — Mary Milbank Brown — *J. J. Augustin*, 279 p., $4.00. Some background material on the development of the theory of relativity.

RELATIVITY: A Richer Truth—Philipp Frank—*The Beacon Press*, 142 p., $2.00. Some of the moral, ethical and political implications of modern science are discussed. Foreword is written by Albert Einstein.

REPORT ON A COLLECTION OF BIRDS FROM GUERRERO, MEXICO—Emmet R. Blake—*Chicago Natural History Museum*, 18 p., paper, 25 cents.

REPORT ON A COLLECTION OF BIRDS FROM OAXACA, MEXICO—Emmet R. Blake—*Chicago Natural History Museum*, 24 p., paper, 25 cents.

A SELECTED AND ANNOTATED BIBLIOGRAPHY OF RECENT SOURCES OF INFORMATION ON THE INDUSTRIALIZATION OF TEXAS—Stanley A. Arbingast and Marshall A. Beasley—*The University of Texas*, 15 p., paper, free upon request to publisher, College of Business Administration, Austin 12, Texas.

SEQUOIA NATIONAL PARK: A Geological Album—Francois E. Matthes—*University of California Press*, 136 p., illus., $3.75. A pictorial volume containing nontechnical annotations which interpret the geologic evidence illustrated.

SITES OF THE RESERVES PHASE-PINE LAWN VALLEY, WESTERN NEW MEXICO—Paul S. Martin and John B. Rinaldo—*Chicago Natural History Museum*, 174 p., illus., paper, $3.00. A report of an archaeological excavation.

SIZES OF FARMS IN THE UNITED STATES—Kenneth L. Bachman and Ronald W. Jones—*Gov't. Printing Office*, U. S. Dept. of Ag. Tech. Bull. No. 1019, 79 p., illus., 25 cents.

Science News Letter, December 30, 1950

Wide usage of *acorns* as human food prevailed during pioneer days; meal from them was leached with hot water to remove the tannic bitterness.

ERRATA, Vol. 58, Nos. 1-27, July-December, 1950

PAGE	TITLE BEGINS	CORRECTION
85	Winter Shots	Par. 6, *read* Dr. Martin has moved to Winnipeg. *Delete* remainder.
118	Tin	Par. 6, line 8, Zurich *for* Vienna.
121	BW, Wartime Weapon	Par. 3, lines 4, 5, *read* in Veterinary Medicine (Aug.).
126	Planes Should Have	Col. 2, line 5, Rentzel *for* Rentzell.
174	Nature Ramblings	Col. 2, line 7, animal phylum *for* great order.
259	Rabbit Fever	Par. 3, line 3, after Jellison *insert* and Glen M. Kohls; line 7, *delete* and Glen M. Kohls. Par. 4, line 4, *read* between 1945 and 1949, *for* during the past year.
260	Rabbit Fever	P. 260, line 3, three *for* two.
285	Indians Antedate	Col. 2, line 7, Willard *for* William.
365	Malaria Cure	Par. 2, line 6, *after* all *insert* but one.
296	Women in Homes	Par. 3, line 2, *delete* annual.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 550. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

CONVERTIBLE SHOE with removable sole, recently patented, permits the owner to change from a light to heavy sole almost instantly. The shoe and the soles are manufactured separately. They are attached or separated easily by a special locking device.

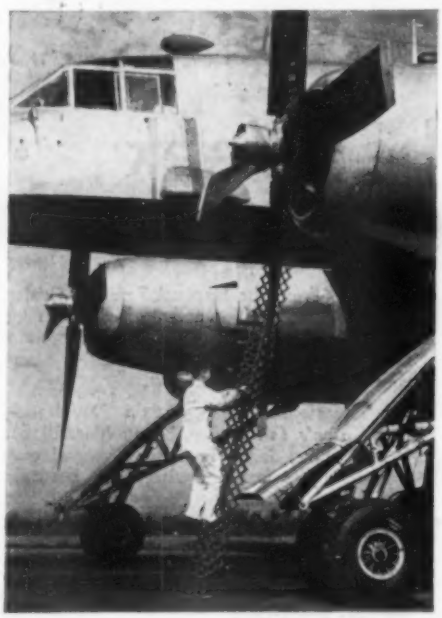
Science News Letter, December 30, 1950

CASEMENT WINDOWS for houses are cast in a single unit and have no welded or other joints. Casting in this form is made possible by a new type of permanent mold. Increased strength and rigidity is one advantage while rounded corners make cleaning easier.

Science News Letter, December 30, 1950

BUSINESS-FORMS MACHINE permits copy to be typed and lines to be ruled as needed on one-page forms for records, tabulated reports and other matters. The machine rules single or double lines either horizontally or vertically as well as dots and dashes.

Science News Letter, December 30, 1950



COLLAPSIBLE LADDER can be folded into a portable three-foot package easily carried by one man, although it is 15 feet long when expanded. Built on the principle of a collapsible gate, it is shown in the picture in use on the runway of the airplane company that developed it.

Science News Letter, December 30, 1950

ROLLER PAINT-APPLIER, recently patented, eliminates the dripping that sometimes comes from similar devices. The roller that spreads the paint is fed by another roller that gets its supply direct from the paint container.

Science News Letter, December 30, 1950

MECHANICAL PENCIL carries a two-inch wide, 36-inch long roll of memo paper in its barrel. When the pencil is twisted the end of the roll appears and as much of the paper can be pulled out as needed. Refills are available. The pencil can be used to hold a roll of postage stamps if desired.

Science News Letter, December 30, 1950

VOICE AMPLIFIER, a portable 12-pound public address system easily carried all day with a shoulder strap, is designed for a guide or instructor escorting a party on indoor or outdoor trips. Complete with battery, the amplifier is attached by cable to the microphone.

Science News Letter, December 30, 1950

COVER CLOTH for interior painters and paperhangers is made of plastic sheeting that resists paint and chemicals and will not flash or support combustion. Paint on it, after drying, can be shaken off and the entire cloth can be cleaned with a damp rag.

Science News Letter, December 30, 1950

Do You Know?

Roses, berry bushes and broadleaf evergreens need protection from winter conditions by late-fall *mulching*.

"Pigeon's milk," the first food of the newly hatched dove which it gets from the parent's mouth, is an actual form of milk secreted in the crop of the adult bird.

When an *atomic bomb* explodes, the characteristic cloud created reaches an altitude of 10,000 feet in about four-fifths of a second.

New York City Police Department, which has three *helicopters*, has used them to save many lives in the harbor and nearby waters during the past two years.

The number of persons needed to operate *Loran stations*, which enable mariners at sea to get their geographical location by radio waves, has been cut to half by new automatic equipment.

Korea, in 1948, ranked second among the shippers of *tungsten* ore to the United States, sending over 3,500,000 pounds.

High-frequency sound waves are sometimes used to scare away birds and rats; the frequency used is too high to register as sound in the human ear.

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ERRATA, Vol. 57, Nos. 1-25, January-June, 1950

PAGE	TITLE BEGINS	CORRECTION
60	Words in Science	Par. 3, lines 5, 6, *delete* sentence "Methyl alcohol . . . compound."
62	Cats	Col. 2, lines 15-17, *delete* "although they . . . common cat."
104	Chloromycetin Stems	Par. 3, line 5, *delete* seven.
105	New Stainless Steel	Par. 2, last sentence, *read* 7% nickel and 1% aluminum.
118	Tick-Tack-Toe Machine	Par. 4, line 4, 362,880 *for* 362,882.
168	Rare Trumpeter Swan	For follow story, see SNL 4/15/50, p. 231.
198	Second Largest Meteor	Col. 3, par. 5, line 7, phosphorus *for* potassium.
205	Words in Science	Par. 3, line 4, *for* called, *read* studied under the general heading of.
246	DDT Does Not Poison	Line 1, *read* The fear that insect fighters might eventually be.
248	Deliberate Infection	Par. 2, line 1, disease-testing *for* crossing; line 2, *after* with *insert* runners of.
249	An Ounce of Prevention	Par. 4, line 1, used *for* mixed; par. 6, line 1, pairs *for* combination.
302	Nature Ramblings	Par. 7, line 6.The American "chameleon" does not flick out its long sticky tongue to snag flies and other insects.
311	Cesium is Most	Line 9, 1,422,000 *for* 34,000.
350	Nature Ramblings	The illustration was of the striped gopher rather than the pocket gopher discussed in the column.
363	Short	Col. 1, substitute Some metals with strong magnetic properties are called ferromagnetic, while those with weak properties are paramagnetic; diamagnetic substances are repelled by a magnet.

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Errata appear on p. 427